420592

FLOOD INSURANCE STUDY

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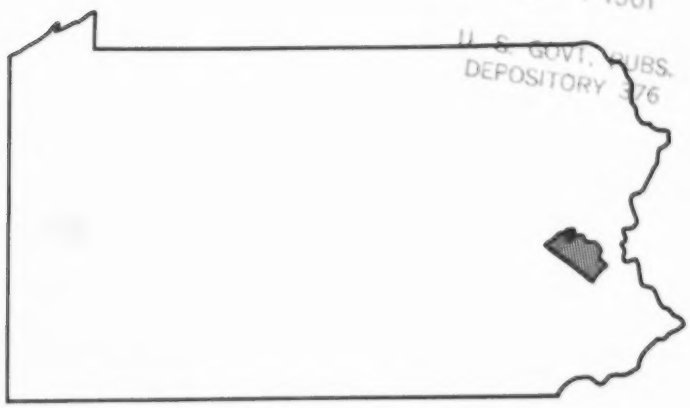
BOROUGH OF SLATINGTON, PENNSYLVANIA
LEHIGH COUNTY



SEPTEMBER 16, 1980

FEDERAL EMERGENCY MANAGEMENT AGENCY
FEDERAL INSURANCE ADMINISTRATION

COMMUNITY NUMBER - 420592

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PUBLISHED SEPARATELY:

Flood Insurance Rate Map

FLOOD INSURANCE STUDY
BOROUGH OF SLATINGTON, PENNSYLVANIA

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Borough of Slatington, Lehigh County, Pennsylvania, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study will be used to convert Slatington to the regular program of flood insurance by the Federal Insurance Administration (FIA). Local and regional planners will use this study in their efforts to promote sound flood plain management.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than those on which these federally-supported studies are based. These criteria take precedence over the minimum federal criteria for purposes of regulating development in the flood plain, as set forth in the Code of Federal Regulations at 44 CFR, 60.3. In such cases, however, it shall be understood that the state (or other jurisdictional agency) shall be able to explain these requirements and criteria.

1.2 Authority and Acknowledgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by Pickering, Corts and Summerson, Inc., for the Federal Insurance Administration, under Contract No. H-4758. This study was completed in October 1979.

1.3 Coordination

On April 27, 1978, the streams to be studied by detailed methods were identified at an initial Consultation and Coordination Officer's (CCO) meeting attended by representatives of the FIA, the Borough of Slatington, and Pickering, Corts, and Summerson, Inc., the study

contractor. The results of the hydrologic analyses were coordinated with the U. S. Army Corps of Engineers (COE), the U. S. Geological Survey (USGS), and the Delaware River Basin Commission (DRBC). On March 28, 1980, a final CCO meeting was held with representatives of the FIA, the borough, and the study contractor.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Borough of Slatington, Lehigh County, Pennsylvania. The area of study is shown on the Vicinity Map (Figure 1).

The Lehigh River and a portion of Trout Creek, from the mouth to a point approximately 2,730 feet upstream, were studied by detailed methods. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction for the next five years, through October 1984.

The remaining portion of Trout Creek was studied by approximate methods. Approximate methods of analysis were used to study those areas having low development potential and minimal flood hazards as identified at the initiation of the study. The scope and methods of study were proposed to and agreed upon by the FIA.

2.2 Community Description

The Borough of Slatington is located along the Lehigh River in the northern portion of Lehigh County in eastern Pennsylvania. It is bordered by the Borough of Walnutport to the east and the Township of Washington to the north, west, and south. Slatington is part of the area in Pennsylvania called the Great Valley Region.

Slatington originally was part of the Township of Washington. Nicholas Kern settled in the area in 1737 and established a grain and saw mill on the Lehigh River. Kern's Fort was constructed in 1756 along the Lehigh River at the present site of Slatington and remained in use as a fort throughout the French and Indian War (Reference 1).

State Route 873 runs north-south through the Township of Washington and the Borough of Slatington. Area residents rely on State Routes

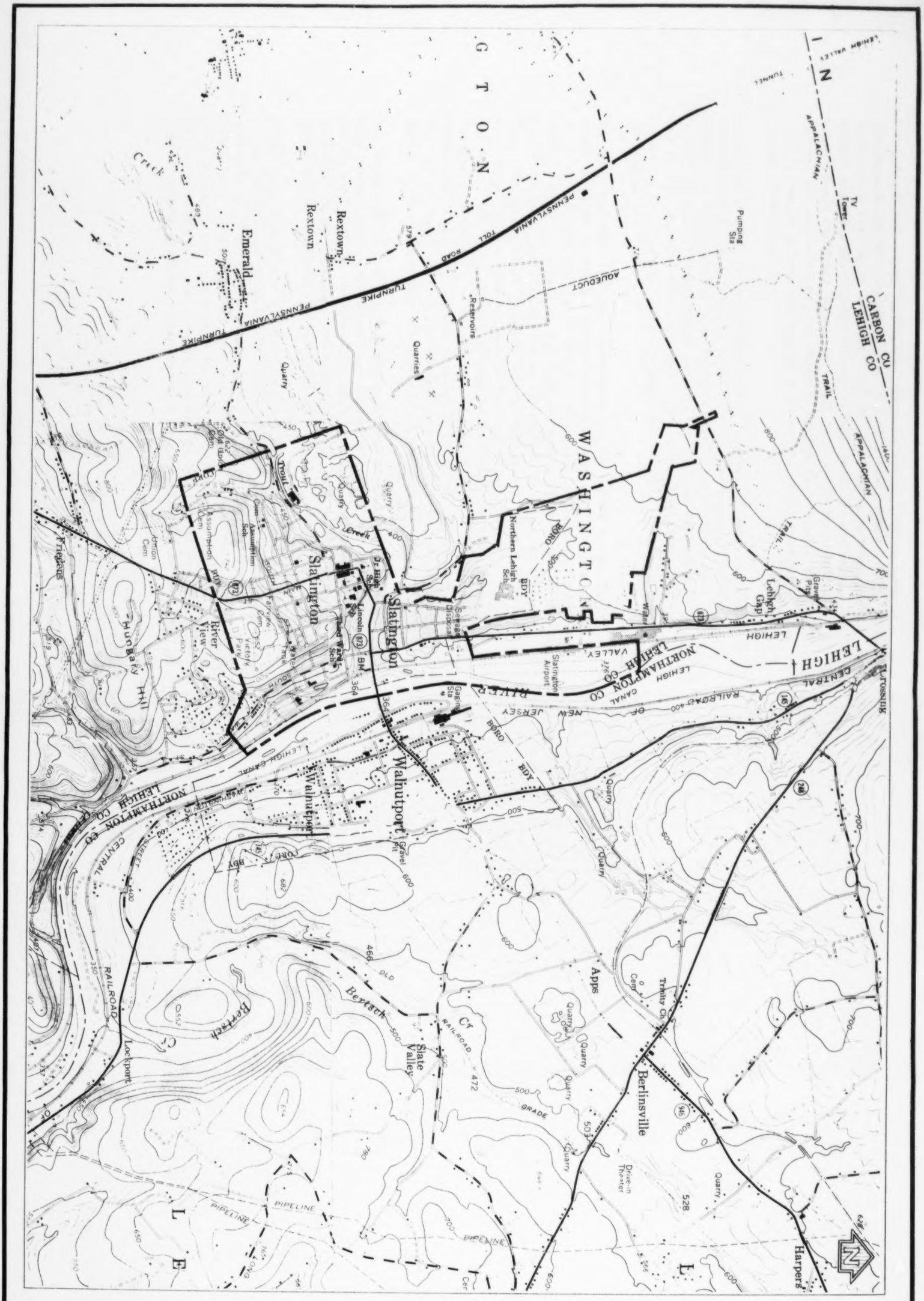


FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY
Federal Insurance Administration

BOROUGH OF SLATINGTON, PA
(LEHIGH CO.)

APPROXIMATE SCALE
2,000 0 2,000 4,000 6,000 FEET

VICINITY MAP

873 and 145 for travel within the immediate region. State Route 873 and State Route 309 provide access into Allentown, Pennsylvania, and State Route 145, which is across the Lehigh River in Northampton County, provides north-south access to Bethlehem, Pennsylvania, and to Lehighton via State Route 248. Rail facilities for passenger service are non-existent, but freight service is available through Conrail, which follows the Lehigh River on the eastern border of the borough (Reference 1).

According to U. S. Bureau of the Census figures, the population increased from 4,316 in 1960 to 4,687 in 1970 (Reference 2). The climate in Slatington is characteristically humid continental. Summer and winter temperatures average 70.2 degrees Fahrenheit (°F) and 28.7°F, respectively. The annual average precipitation of the region is 43.9 inches, while recorded snowfall totals 17.8 inches (Reference 3).

The most important regional watercourse is the Lehigh River, which rises in Wayne County and passes through Pennsylvania for 100 miles prior to its confluence with the Delaware River at Easton, Pennsylvania. The river serves as the boundary between Lehigh and Northampton Counties and also serves as the eastern boundary of Slatington. The Lehigh River drainage area encompasses 1,368 square miles. The average bottom gradient within the area being studied is 9 feet per mile. The flood plains are wide on both sides of the river, but extensive development is absent on the flood plains in Slatington. Elevations within the borough range from a high of 740 feet on a hill on the south side of the borough to a low of 337 feet where the Lehigh River crosses into the Township of Washington.

The topography of the drainage area upstream of Slatington is generally mountainous with well-defined stream valleys. The vegetation of the region varies considerably, with hardwood and softwood trees plentiful in the mountains and numerous State Game Lands. Underbrush and shrub growth are plentiful in the other areas.

Trout Creek drains most of Slatington and Washington, and a portion of the Township of Heidelberg. Little Trout Creek is the principal tributary to Trout Creek, which discharges to the Lehigh River at Slatington. The headwaters of Trout Creek are located on Blue Mountain, which is fed by numerous springs and intermittent streams. The Trout Creek drainage area encompasses 22.4 square miles. The average bottom gradient within the area being studied is 36 feet per mile.

While the flood plain of the Lehigh River is broad within Slatington, the flood plains associated with the other streams in the borough are well-defined and rather narrow. The streams are well channelized, owing to the underlying geology which historically allowed for eroding cuts to penetrate the peneplain rather than continue meandering.

2.3 Principal Flood Problems

The past history of flooding on streams within Slatington indicates that flooding may occur during any season of the year. The worst flooding conditions are normally a result of the combination of spring rain and snowmelt, or summer storms resulting from tropical storms moving north along the east coast of the United States.

According to local information, flooding occurred on the Lehigh River in 1902, 1942, and 1955. The flood of August 19, 1955, attained a maximum discharge of 77,800 cubic feet per second (cfs), which is the highest discharge recorded at the Walnutport gaging station (No. 01451000) since it began operation in October 1946. The Walnutport gaging station is on the opposite side of the Lehigh River from Slatington. Each of the floods crested higher than the 100-year flood, causing damage to structures adjacent to the river.

The elevation of a high-water mark experienced during the August 19, 1955, flood at the Walnutport gaging station was 367.95 feet. The elevation of the water surface of the estimated 100-year flood at this same location is 364.50 feet.

2.4 Flood Protection Measures

There are two major flood protection structures upstream of Slatington which regulate runoff from 384 square miles of the drainage basin. The Francis E. Walter Reservoir on the Lehigh River is located approximately 38 miles upstream from Slatington and regulates flow from 288 square miles, with 108,000 acre-feet of storage allocated to flood control. This dam has been in operation since December 1960. Beltzville Lake and Dam are located on Pohopoco Creek, a tributary of the Lehigh River, approximately 8 miles upstream from Slatington. This structure, which has been in operation since February 1971, regulates 96.3 miles of drainage area, with 27,000 acre-feet of storage allocated to flood control (Reference 4).

At present, there are no flood protection structures within the borough limits. However, there are non-structural measures of flood protection being utilized to prevent future flood damage. These are in the form of land-use regulations adopted from the Code of Federal Regulations, which control construction within areas that have a high risk of flooding.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data for this study. Flood events of a magnitude which are expected to be equalled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance premium rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equalled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than one year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (one-percent chance of annual occurrence) in any 50-year period is about 40 percent (four in ten) and, for any 90-year period, the risk increases to about 60 percent (six in ten). The analyses reported here reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for floods of the selected recurrence intervals for each flooding source studied in detail affecting the community.

For the Lehigh River, the hydrologic analyses were based on the Lehigh River peak discharges presented in the Flood Insurance Study for the Borough of Walnutport (Reference 4). The Walnutport flood-flow frequency analysis was based on a COE regional frequency study (Reference 5), which was developed following the standard log-Pearson Type III analysis as outlined by the Water Resources Council (Reference 6).

For Trout Creek, the hydrologic analyses were also based on the COE regional frequency study (Reference 5), which followed the standard log-Pearson Type III analysis (Reference 6). Since there are no gages located nearby on the creek, missing flood peaks were estimated by correlation with the nearest long-record stations, and the statistics were then recomputed.

The methodologies used to calculate the flood flows relate the magnitude of instantaneous peak stream discharge for selected recurrence intervals to statistically significant drainage basin characteristics. The drainage basin characteristics include channel slope, storage, annual precipitation, and the drainage area as determined from USGS topographic maps and Water Resources Bulletin No. 6 (References 7 and 8).

A summary of drainage area-peak discharge relationships for the streams studied by detailed methods is shown in Table 1, "Summary of Discharges."

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
LEHIGH RIVER					
At the southern corporate limits	911.0	32,100	48,000	60,000	158,000
At the confluence of Trout Creek	889.0	30,000	45,000	55,000	147,500
TROUT CREEK					
At the confluence with the Lehigh River	22.4	2,200	4,500	6,000	11,000

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of the flooding sources studied in detail were carried out to provide estimates of the elevations of floods of the selected recurrence intervals along each of these flooding sources.

Cross sections for the backwater analyses for the streams studied in detail were obtained from aerial photographs taken in April 1974 and April 1976 at a scale of 1"=1,000' (Reference 9). Streambed sections

were obtained by field measurement. All bridges and culverts were surveyed to obtain elevation data and structural geometry in order to compute the significant backwater effects of these structures. Cross sections were located above and below bridges, at control locations along the stream lengths, and at significant changes in ground relief, land use, or land cover. Lehigh River surveys and hydraulics of the Borough of Walnutport Flood Insurance Study were also used as part of the hydraulic analysis (Reference 4).

Roughness coefficients (Manning's "n") for these computations were assigned on the basis of field inspection of flood plain areas and comparisons with data on other nearby basins. The channel roughness coefficients for the Lehigh River ranged from 0.027 to 0.038, and the overbank roughness coefficients ranged from 0.060 to 0.080. The channel roughness coefficient for Trout Creek was 0.040, and the overbank roughness coefficients ranged from 0.080 to 0.150.

Starting water-surface elevations for the Lehigh River were based upon Lehigh River flood profile data presented in the Borough of Walnutport Flood Insurance Study (Reference 4). Starting water-surface elevations for Trout Creek were calculated using the slope/area method. Water-surface elevations of floods of the selected recurrence intervals were computed through the use of the COE HEC-2 step-backwater computer program (Reference 10).

Flood profiles were drawn showing computed water-surface elevations to an accuracy of 0.5 foot for floods of the selected recurrence intervals. Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway is computed (Section 4.2), selected cross-section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

For the approximate study of Trout Creek, the 100-year water-surface elevations were approximated by field inspection of the area, engineering judgment, examination of available topographic mapping, and the use of the Flood Hazard Boundary Map for Slatington (Reference 11). The effects of bridges, culverts, and other structures affecting flood elevations were considered. Approximate flood limits were then interpolated between each location.

All elevations used in this study are referenced to the National Geodetic Vertical Datum of 1929 (NGVD), formerly referred to as Sea Level Datum of 1929. Locations of the elevation reference marks used in the study are shown on the maps.

The hydraulic analyses for this study are based on the effects of unobstructed flow. The flood elevations shown on the profiles are valid only if hydraulic structures remain unobstructed, and dams and other flood control structures operate properly and do not fail.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages state and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by the FIA as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the boundaries of the 100- and 500-year floods have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using topographic maps at a scale of 1"=200' with a contour interval of 5 feet (Reference 12). In cases where the 100- and 500-year flood boundaries are close together, only the 100-year boundary has been shown.

For the approximate study of Trout Creek, the boundary of the 100-year flood was delineated by field inspection, engineering judgment, and USGS topographic maps (Reference 7).

The boundaries of the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map (Exhibit 2). Small areas within the flood boundaries may lie above the flood elevations and, therefore, may not be subject to flooding. Owing to limitations of the map scale and lack of detailed topographic data, such areas are not shown.

4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity, increases the flood heights of streams, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic

gain from flood plain development against the resulting increase in flood hazard. For purposes of the Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment in order that the 100-year flood can be carried without substantial increases in flood heights. Minimum standards of the FIA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this report are presented to local agencies as minimum standards that can be adopted or that can be used as a basis for additional studies.

The floodways presented in this study were computed on the basis of equal conveyance reduction from each side of the flood plains. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 2).

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway widths were determined at cross sections; between cross sections, the boundaries were interpolated. In cases where the boundaries of the floodway and the 100-year flood are either close together or collinear, only the floodway boundary has been shown. Portions of the floodway widths of the Lehigh River are located outside the corporate limits of the Borough of Slatington.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

Near the mouths of streams studied in detail, floodway computations are made without regard to flood elevations on the receiving water body. Therefore, "With Floodway" elevations presented in Table 2 for certain downstream cross sections of Trout Creek are lower than the regulatory flood elevations in that area, which must take into account the 100-year flooding due to backwater from other sources.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
Lehigh River								
A	1,155[1]	442[3]	7,439	8.1	359.4	359.4	360.3	0.9
B	2,545[1]	416[3]	6,136	9.8	361.1	361.1	361.8	0.7
C	3,975[1]	437[3]	6,092	9.0	363.5	363.5	364.4	0.9
D	4,465[1]	424[3]	5,907	9.3	364.3	364.3	365.1	0.8
E	5,885[1]	304[3]	4,961	11.1	366.4	366.4	367.1	0.7
F	7,095[1]	236[3]	4,535	12.1	368.1	368.1	369.1	1.0
G	8,995[1]	330[3]	5,296	10.4	372.0	372.0	372.7	0.7
Trout Creek								
A	200[2]	86	866	6.9	361.9	360.0[4]	360.8	0.8
B	350[2]	89	744	8.1	361.9	360.5[4]	361.5	1.0
C	840[2]	134	596	10.1	363.1	363.1	363.1	0.0
D	1,470[2]	75	492	12.2	370.6	370.6	370.6	0.0
E	2,000[2]	100	1,035	5.8	375.9	375.9	376.5	0.6
F	2,330[2]	98	986	6.1	376.5	376.5	377.3	0.8
G	2,730[2]	100	779	7.7	377.8	377.8	377.9	0.1

[1] Feet from corporate limits
[2] Feet above confluence with Lehigh River
[3] This width extends beyond the corporate limits
[4] Elevation computed without consideration of backwater effects from the Lehigh River

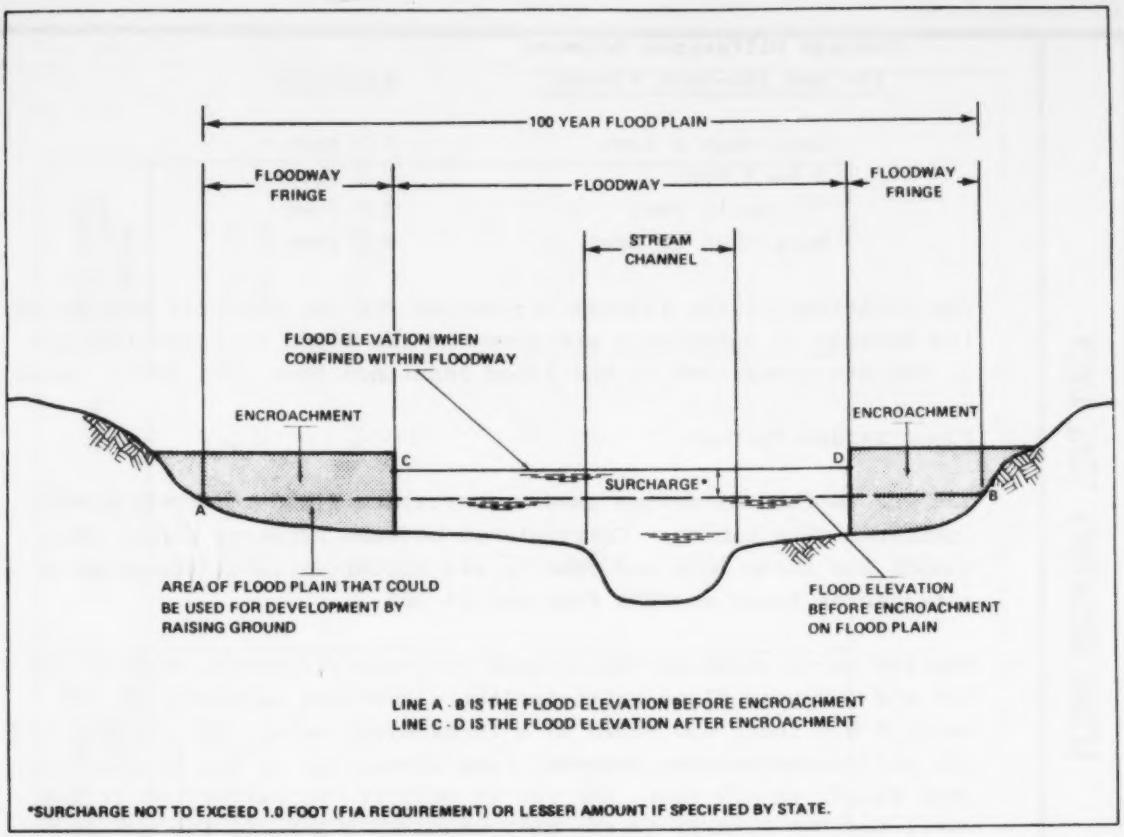
TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY
Federal Insurance Administration

BOROUGH OF SLATINGTON, PA
(LEHIGH CO.)

FLOODWAY DATA

LEHIGH RIVER AND TROUT CREEK


100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A - B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C - D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FIA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

FLOODWAY SCHEMATIC Figure 2

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, the FIA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors (FHFs), and flood insurance zone designations for each flooding source affecting the Borough of Slatington.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 percent of the reach.

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the flooding sources of the Borough of Slatington are shown on the Flood Profiles (Exhibit 1) and are summarized in the Flood Insurance Zone Data Table (Table 3).

5.2 Flood Hazard Factors

The FHF is the FIA device used to correlate flood information with insurance rate tables. Correlations between property damage from floods and their FHFs are used to set actuarial insurance premium rate tables based on FHFs from 005 to 200.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest 0.5 foot, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year water-surface elevations is greater than 10.0 feet, accuracy for the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective FHFs, the entire incorporated area of the Borough of Slatington was divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone A: Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.

Zones A9, A10, A11: Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to FHF.

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Lehigh River							
Reach 1	01	-5.6	-2.3	+14.5	055	A11	Varies
Reach 2	01	-4.5	-1.7	+12.4	045	A9	Varies
Trout Creek							
Reach 1	01	-4.9	-1.8	+4.7	050	A10	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY
Federal Insurance Administration

BOROUGH OF SLATINGTON, PA
(LEHIGH CO.)

FLOOD INSURANCE ZONE DATA

LEHIGH RIVER AND TROUT CREEK

Zone B: Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; also, areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.

Zone C: Areas of minimal flooding.

Table 3, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding sources studied in detail in the Borough of Slatington.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Borough of Slatington is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by the FIA.

6.0 OTHER STUDIES

The Flood Insurance Study for the Borough of Walnutport has been prepared (Reference 4). The results of this study are in exact agreement with the results of that study. Flood Insurance Studies for the Townships of Lehigh and Washington are currently being prepared (References 13 and 14). The results of those studies will be in exact agreement with the results of this study. Also, the Flood Hazard Boundary Map for the Borough of Slatington has been published (Reference 11).

This study is authoritative for purposes of the Flood Insurance Program, and the data presented here either supersede or are compatible with previous determinations.

7.0 LOCATION OF DATA

Survey, hydrologic, hydraulic, and other pertinent data used in this study can be obtained by contacting the office of the Insurance and Mitigation Division of the Federal Emergency Management Agency, Regional Director, Region III Office, Curtis Building, Sixth and Walnut Streets, Philadelphia, Pennsylvania 19106.

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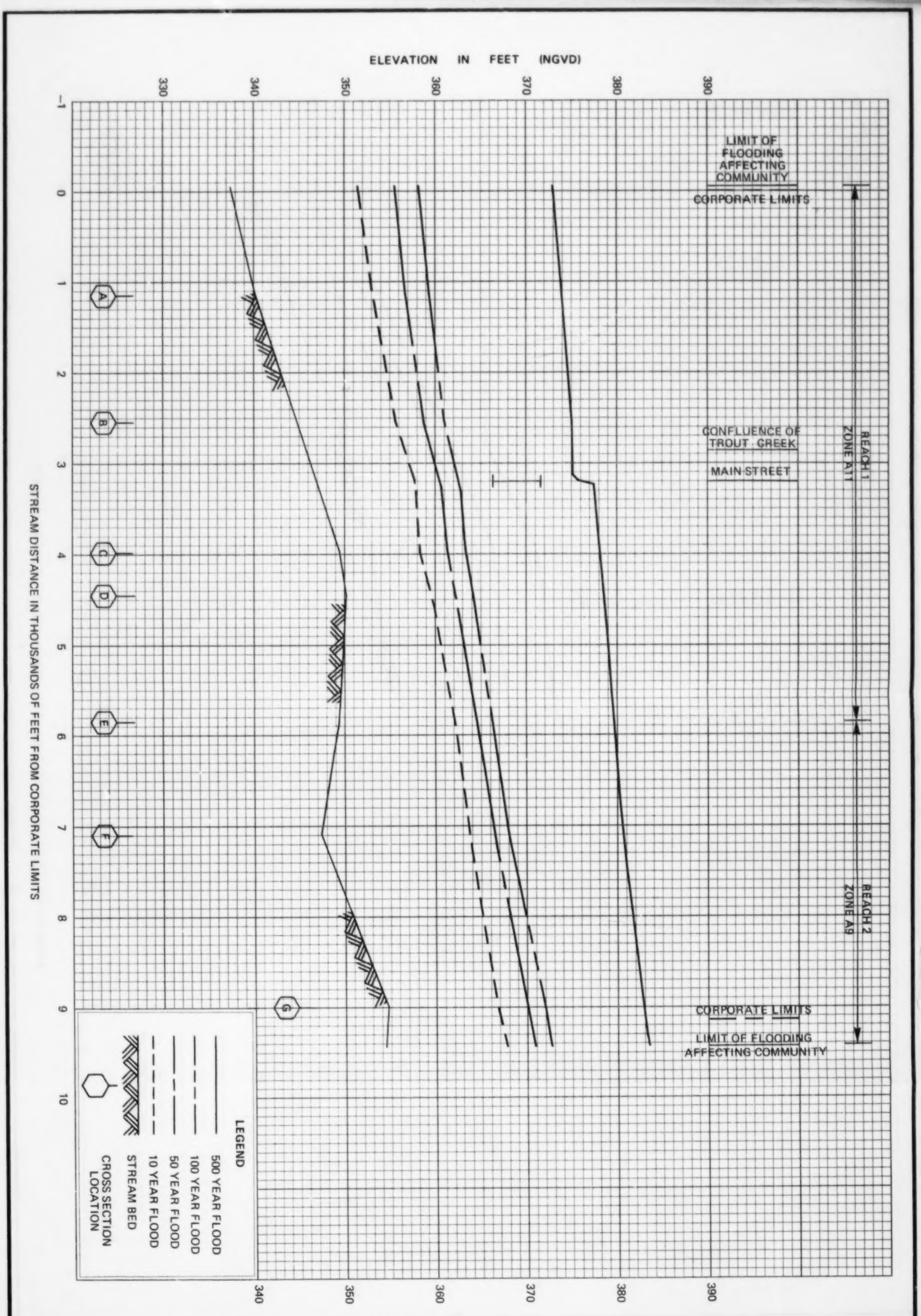

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FEDERAL EMERGENCY MANAGEMENT AGENCY
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BOROUGH OF SLATINGTON, PA
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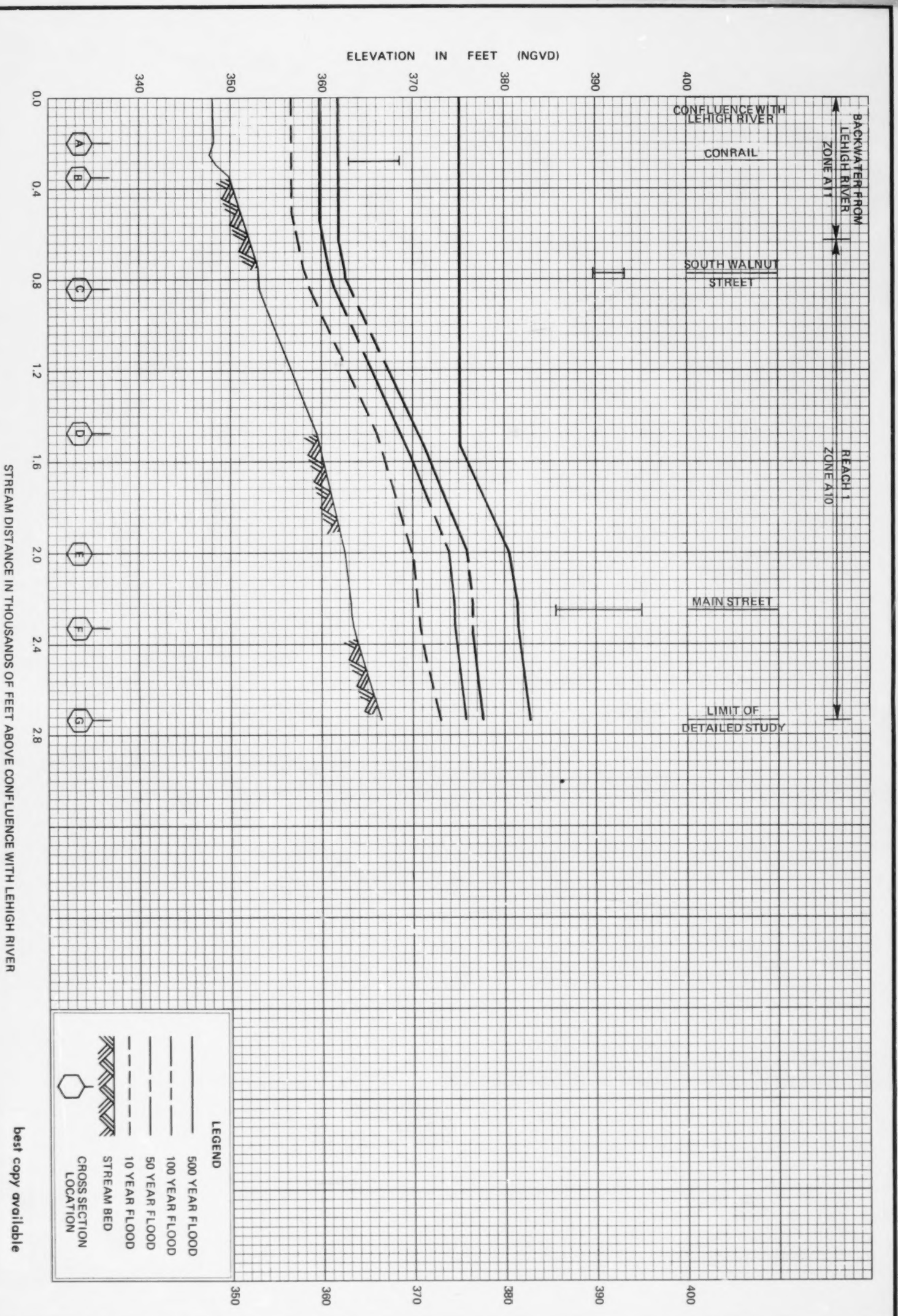
FLOOD PROFILES

LEHIGH RIVER



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(LEHIGH CO.)

FLOOD PROFILES

TROUT CREEK